CURRICULUM VITAE

Fidel Costa Rodríguez
Date and place of birth: 20/03/71, Barcelona, Spain.
Spanish Citizenship

Professional address:
Earth Observatory of Singapore
Nanyang Technological University
Singapore 639798
tel (65) 6592 2401; fax (65) 6792-2149
email: fcosta@ntu.edu.sg

UNIVERSITY STUDIES AND DIPLOMAS OBTAINED

03/1995-11/1999: Ph.D. in Earth Sciences, Department of Mineralogy, University of Geneva, Switzerland. "The petrology and geochemistry of diverse crustal xenoliths, Tatara-San Pedro Volcanic Complex, Chilean Andes". Advisors: Prof. Michael Dungan (Department of Mineralogy, University of Geneva) and Prof. Bradley Singer (Department of Geology and Geophysics, University of Wisconsin, USA).

10/1989-12/1994: Bachelor degree in Earth Sciences. University of Barcelona (Spain).

PROFESSIONAL/RESEARCH EXPERIENCE

02/2010-present. Assistant professor and Principal Investigator at the Earth Observatory of Singapore. Nanyang Technological University, Singapore.

10/2006-01/2010. Ramon y Cajal Research Fellowship at the CSIC, Institut de Ciences de la Terra 'Jaume Almera', Barcelona, Spain.

12/2002-09/2006. Post-doctoral position at the Institut für Geologie, Mineralogie und Geophysik, Ruhr-Universitat, Bochum, Germany.

11/2000-11/2002. Marie-Curie Research Fellowship at the Institut des Sciences de la Terre d'Orléans-CNRS, France.

12/1999-10/2000. Post-doctoral position at the Department of Mineralogy of the University of Geneva, Switzerland.

03/1995-11/1999: Ph.D. thesis research funded by the Swiss National Science Foundation.

1996-1997: Laboratory assistant of the electron microprobe laboratory at the University of Lausanne, Switzerland.

1994-1995: Employee of the Spanish Geological Survey (ITGE). Detailed mapping and characterization of mineral deposits. Metalogenetic map, sheet 25 (Figueres), 1:200,000.

1993-1995: Young Scientist research project: 'The geological mapping of a Neolithic Mine'. In collaboration with A. Camprubí and M.C. Salvany, Funded by the European Community Program for Young Scientists.

RELEVANT SCIENTIFIC TECHNIQUES AND SKILLS

* Experience in modeling differential equations using finite difference techniques.
* Experience in thermodynamics of point defects in minerals, and of volcanic fluids.
* Experience in producing thin films of silicate minerals using the pulsed laser deposition method.
* Experience in performing and designing phase equilibria and kinetic experiments in 1 atmosphere gas flowing furnace, internally heated pressure vessels equipped with a Shaw membrane and fast-quench device, and in piston cylinder apparatus.
* Experience in the operation of: Cameca SX50 electron microprobe, FEG- Jeol electron microprobe, LA-ICP-MS (quadrupole), TOF-SIMS, Cameca IMS-4f ion microprobe, scanning electron microscope equipped with an electron backscatter diffraction detector, Fourier Transformed Infrared, and Raman Spectroscopy instruments.
* Experience on working in clean laboratory. Column chemistry for isotopes of Rb-Sr, Pb, Sm-Nd in microsamples by isotope dilution.
* Experience on organizing and carrying out field work in complex or remote areas .

RESEARCH INTERESTS

Application of experimental data (phase equilibria and kinetics) and numerical modeling to understand the processes and rates of formation and evolution of magmatic rocks. Emphasis on volcanic rocks, especially on silicic eruptions and their associated volatiles.

PROFESSIONAL ACTIVITIES/OUTREACH

*Co-convener: Symposium "V12B: Petrologic insights on magmatic processes controlling shits in eruption style", American Geophysical Union Fall Meeting, 2012.
*Co-convener: Session SE105-107 Magmatic Processes and Possible Links to Volcano Monitoring Data, Asia Oceania Geosciences Society 2012, Singapore.
*Co-convener: Session SE52 Volatiles in Volcanic Processes, Asia Oceania Geosciences Society 2011 (Taipei, Taiwan).
*Co-convener: Session Time-scales of Magmatic Processes and Volcanological Implications, IUGG-IAVCEI Conference, 2011.

*Co-convener: Symposium ‘5h Kinetics of Metamorphic and Igneous Processes’, 19th Annual Goldschmidt Conference, 2009.
*Co-convener: Symposium "V38: Minerals, Inclusions and Volcanic Processes: Crystal-scale records of magma dynamics", American Geophysical Union Fall Meeting, 2008.
*Co-organizer: Geological Society of America Field Forum 'Assessing the state of our knowledge of continental arc volcanism: The Tatara-San Pedro complex, 36 ^{o}S, Andean Southern Volcanic Zone' Chile, 2007
*Co-convener: Symposium 'Links between radioactive isotopes and diffusion modelling to constrain the timescales of magmatic processes' 17th Annual Goldschmidt Conference, 2007.
*Co-convener: Symposium 'Will the real phenocrysts please stand up?', American Geophysical Union Fall Meeting, 2005.

*Reviewer: Bulletin of Volcanology, Journal of Petrology, Geochimica et Cosmochimica Acta, Journal of Volcanology and Geothermal Research, Contributions to Mineralogy and Petrology, Reviews in Mineralogy and Geochemistry, Chemical Geology, Geology, Earth and Planetary Science Letters, Physics of the Earth and Planetary Interiors, Science.

* Science proposals reviewer for the US National Science Foundation (Geophysics Panel, Geochemistry Panel), European Research Council, French Research Council, and NERC (UK), and AXA foundation.

* Commission of evaluation of candidates for position Associate Professor in Experimental Petrology from the Universidad Nacional Autonoma de Mexico (2010).
* Commission of evaluations for candidates of electron microprobe laboratory, Outreach Director, and Professor jobs for Volcano, Climate, and Tectonics themes at EOS (2010-2011).

* Associate Editor of ‘Geologica Acta’ since 2009.
* Associate Editor of ‘Geochemistry, Geophysics, Geosystems’ since 2012.
* Associate Editor of “American Mineralogist’ since 2012.

* American Geophysical Union: Executive Committee of the Volcanology, Geochemistry, Petrology section since 01/2011. Chair of the Western Pacific Meeting.

OUTREACH

* Participation in activities of 'What's in a rock' within the frame of Young Scientist Challenge of Singapore (July 2010)

* Participation in activities of ‘Forecasting volcanic eruptions’ within the frame of Young Scientist Challenge of Singapore (July 2011)

* Co-organiser of field trip to Merapi volcano with geography teachers from Singapore and NIE (3-7 June 2012).

* Co-producer of a short film “Knowledge capsule” about the work of volcano petrologists to understand the driving forces behind eruptions.

STUDENT ADVISING/MENTORING

*PhD student advisee T. Girona (NTU, start: 2010). PhD topic 'Numerical modeling of permanent degassing volcanoes'.

*PhD student co-advisee: D. Krimer (NTU, EOS, Start: 2010). PhD topic ' Geochemistry and Petrology of Gede volcano, Indonesia'.

*Post-doctoral mentoring of J. Cabato (NTU, EOS, 2010-2012). Main topic: 'Unraveling the plumbing system of Mayon volcano and its relation to degassing and monitoring data'.
*Post-doctoral mentoring of C. Bouvet de Maisonneuve (Swiss National Foundation project, NTU, EOS, 2012-on going). Main topic: Understanding seismic and deformation unrest at Rabaul caldera.

*Ph.D. student co-advisee: (Ruhr-Universitat Bochum, Germany), Maren Kahl (2006-2011). Now post-doc at Ruhr-Uni-Bcohum.

*MS examiner: (Florida International University, USA), Tiffany McKelvey (2007).

FIELD EXPERIENCE

Argentina, Chile, Costa Rica, France, Indonesia, Italy, Philippines, Papua New Guinea, Nicaragua, Philippines, Spain, United States of America.

LANGUAGES

Catalan and Spanish are my mother tongues, I am fluent in English and French, can communicate in German, and have basic knowledge of Indonesian.

GRANTS

*1993-1994 European Community ' The geological mapping of a Neolithic Mine' 6000 euro. Co-Principal Investigator

*1996-1997. Societe Suisse d’Histoire Naturelle , Switzerland 'The mapping of Volcan San Pedro' 3000 euro. Principal Investigator

*2000-2002 European Community 5th framework Program ' Experimental simulation and geochemical characterization of interactions between evolved liquids and gabbroic mineral assemblages at moderate pressures (<10 kbar). 100000 euro. Co-Principal Investigator.

*2003-2005 German National Science Foundation 'The dependence of dislocation creep rate of minerals on environmental variables (P,T, and chemistry): the role of water'. 200000 euro. Co-Principal Investigator.

*2005-2008 German National Science Foundation ' Rheological response of continental crust to thermal pulses related to magmatism and volcanism'. 280000 euro. Co-Principal Investigator.

*2005-2008 Ministerio de Educacion y Ciencia de España 'Elaboración de los mapas de peligros pasados, mapas de peligrosidad y escenarios eruptivos para las islas Canarias. 200000 euro. Co-Principal Investigator.

*2005-2008 Ministerio de Educacion y Ciencia de España 'Volcanología física del volcanismo calcoalcalino del Cabo de Gata'. 60000 euro. Co-Principal Investigator.

*2006-2008 Ministerio de Educacion y Ciencia de España ' Determinación experimental y modelización cinética de las variables intensivas pre-eruptivas y tiempos de residencia de los magmas del Volcán Teide' 15000 euro. Principal Investigator.

*2006-2009 Ministerio de Educacion y Ciencia de España ' Riesgos geológicos en Tenerife: analisis de susceptibilidad y peligrosidad' 60000 euro. Co-Principal Investigator.

*2008-2009 Ministerio de Educacion y Ciencia de España 'Los tiempos de residencia de los magmas antes de la erupción: contribución a la cuantificación del riesgo volácnico en Tenerife' 12000 euro. Principal Investigator.

*2009-2011 Ministerio de Educacion y Ciencia de España 'Análisis de la peligrosidad volcanica asociada a la actividad explosiva del Teide'. 150000 euro. Co-Principal Investigator.

* 2010-2011. Magma Plumbing system of active volcanoes-I. Singapore National Science Foundation, 150 000 S$. Principal Investigator.
* 2011-2012. Magma Plumbing system of active volcanoes-II. Singapore National Science Foundation, 150 000 S$. Principal Investigator.
* 2011-2012. Understanding magmatic unrest at caldera systems. 11 000 S$. Principal Investigator.
* 2011-2012. Mayon as a laboratory volcano. Singapore National Science Foundation. Co-principal investigator.
* 2011-2012. Gede and Salak (Indonesia) as laboratory volcanoes. Singapore National Science Foundation. Co-principal investigator.

*2012-2013. MERLION grant of collaboration with France research institutes. PI for the Singapore side. 24 000 euro

INVITED LECTURES AND COMMUNICATIONS

At meetings and conferences

* AGU Fall meeting 2012 (San Francisco), session 'V041: Space, Time, and Transport in Petrology and Geochemistry'.

* AGU Fall meeting 2012 (San Francisco, USA), session 'V007: Combining petrological studies of volcanic systems with geophysical, gas, and other information sources'.

* Asia-Oceania Geophysical Society, August 2012 (Singapore), session 'SE85 Time Scales of Magmatic Evolution and Eruption in Intermediate to Silicic Magmatic Systems'.

* Goldschmidt Conference June 2012 (Montreal, Canada), session 'SS25- Geochemical evolution of silicic magma systems'. **KEYNOTE**.

*IUGG-IAVCEI meeting 2011 (Melbourne), session 'V01 Magma Chambers and Their Dynamics: how big are they, their time scales of formation and longevity, how do we detect them, crystals and their stories'

*EGU meeting 2011 (Vienna), session, 'GMPV12-Measuring and modelling of volcano eruption dynamics: I. shallow magma storage and ascent'.

*AGU Fall meeting 2010 (San Francisco), session 'V24C-Volatiles in Magmas: Breath of the Deep Earth'.

*EGU meeting 2009 (Vienna), session 'GMPV4- Unraveling magma generation and differentiation: Field, analytical, experimental and numerical investigation of magmatic and volcanic systems'.

*AGU Fall meeting 2008 (San Francisco), session 'V43J- Thermobarometry and implications for magma storage and transport'.

*AGU Fall meeting 2008 (San Francisco), session 'MR21C- Diffusion and related transport processes in Geomaterials'.

*AGU Fall meeting 2006 (San Francisco), session 'V53E- From crystals to plutons: crystal-scale records of magmatic processes'.

*Goldschmidt Conference 2005 (Moscow, Idaho), session 'SS25- Geochemical evolution of silicic magma systems'.

*AGU Fall meeting 2004 (San Francisco), session 'V23C-Quantitative Constraints on Rates of Reaction, Deformation, and Mass Transfer: Crustal Processes'.

*AGU Fall meeting 2004 (San Francisco), session 'V23D- Arenal Volcano: Magma Genesis, Volcanological Processes, and Societal Responses '

At Universities and research institutions

* Oregon State University, Corvallis. Department of Earth Sciences. December 2010.

*Servicio Geologico y Minero de Chile (Chile), and Universidad de Chile (Chile): 'Las escalas de tiempo de diferenciacion magmatica', October 2008.

*University of Granada (Spain) 'Times scales of magmatic processes', November 2007.

*University of Toulouse (France) 'Crystal zoning as a clue to time scales of igneous processes', October 2007.

*University of Bochum (Germany) 'The influence of water in the diffusion rates of Si and O in mantle olivine', January 2007.

*University of Geneva (Switzerland) 'The rate of magmatic assimilation in arc magmas', December 2006.

*University of Bristol (UK) 'Modelling the zoning patterns of igneous crystals' December 2004.

TEACHING

* 2012. Summer semester, Graduate course for non-geologists, 'Foundations of earth sciences', Division of Earth Sciences, NTU.

* 2011. Summer semester, Graduate course for non-geologists, 'Foundations of earth sciences', Division of Earth Sciences, NTU.

*2008. Time Scales of Igneous Processes From Diffusion Modeling of Crystal Zoning Patterns. 'Minerals, Inclusions and Volcanic Processes', Mineralogical Society of America Short Course, San Francisco, 13-14 December.

*2007. Curso de introducción a la vulcanología: Termodinámica y procesos cinéticos. Universitat de Barcelona (Spain). 1-3 June.

*2006. Geospeedometry and the time scales of geological processes. '2nd Short Course of Diffusion in Geological Materials', 19-22 April. Free Berlin University, Germany.

*2005. Geospeedometry and the time scales of geological processes. '1st Short Course of Diffusion in Geological Materials'. 22-24 September. University of Basel, Switzerland.

*1995-1999. Optical Mineralogy laboratory. Department of Mineralogy, University of Geneva, Switzerland
*1995-1999. Igneous Petrology laboratory. Department of Mineralogy, University of Geneva, Switzerland.

*1995-1999. Field geological mapping (France, Spain and USA). Department of Mineralogy, University of Geneva, Switzerland

MEMBERSHIPS OR PROFESSIONAL AFFILIATION

*Member of the American Geophysical Union since 1995

*Member of the Mineralogical Society of America since 2001

*Member of the Geochemical Society since 2003

*Member of the International Association for Volcanology and Chemistry of the Earth's Interior since 2003

*Member of the Spanish Mineralogical Society since 2007

PUBLICATIONS AND OUTCOMES OF RESEARCH WORK

In review

Castro, A., Martí, J., Costa, F., Ruiz de Almodovar, C.R., Carrasquilla, S., Pedreira, R., De Bolos, X., (in review) Real-time correlation of magma evolution and geophysical monitoring in the El Hierro 2011-2012 submarine eruption. Journal of Geophysical Research

Costa, F., Andreastuti, S., Bouvet de Maisonneuve, C., Pallister, J. (in review) Petrological insights into the storage conditions, magmatic processes, and time scales that yielded the centennial 2010 Merapi explosive eruption. Journal of Volcanology and Geothermal Research.

*Girona, T., Costa, F., Newhall, C. (in review) Gas mass lost during quiescence as driver of eruptions at permanently degassing volcanoes. Science.

*Girona, T., Costa, F. (in review) DIPRA: a user-friendly program to model multi-element diffusion in olivine with applications to timescales of magmatic processes. Geochemistry, Geophysics, Geosystems.

*Kahl, M., Chakraborty, S., Costa, F., Pompilio, M., Liuzzo, M., Viccaro, M (in review) Compositionally zoned crystals and real-time degassing data reveal changes in magma transfer dynamics during the 2006 summit eruptions of Mt. Etna. Bulletin of Volcanology.

Related to the time-scales and geochronology of magmatic processes

Druitt, T.H., Costa, F., Deloule, E., Dungan, M., Scaillet, B. (2012) Decadal to monthly timescales of magma transfer and reservoir growth at a caldera volcano. *Nature* 482, 77–80.

*Kahl M, Chakraborty S, Costa F, and Pompilio M (2011) Dynamic plumbing system beneath volcanoes revealed by kinetic modeling, and the connection to monitoring data: An example from Mt. Etna. *Earth and Planetary Science Letters*. 308, 11-22.

Dosseto, A., Turner, S.P., Costa, F., and Van Orman, J.A (2010) Introduction to the Timescales of Magmatic Processes; In: (Eds: A. Dosseto, S.P. Turner, and J.A. Van Orman), Timescales of magmatic processes: from core to atmosphere, 1-8 pp.

Costa, F. and Morgan D, (2010) Time constraints from chemical equilibration in magmatic crystals. In: (Eds: A. Dosseto, S.P. Turner, and J.A. Van Orman), Timescales of magmatic processes: from core to atmosphere, 125-159 pp.

Costa, F, (2010) Residence times and magmatic evolution (translated from Spanish). Macla Vol.12, p.10-16.

Costa, F., Coogan, L., and Chakraborty S. (2010) The time scales of magma mixing and mingling involving primitive melts and melt–mush interaction at mid-ocean ridges. *Contributions to Mineralogy and Petrology* 159, 371–387.

Costa, F., Dohmen, R., and Chakraborty S. (2008) Time Scales of Magmatic Processes from Modeling the Zoning Patterns of Crystals. *Reviews in Mineralogy and Geochemistry* 69. 545-594.

Costa, F., (2008) Residence times of silicic magmas associated with calderas. In: Caldera Volcanism: Analysis, Modelling and Response. Gottsmann, J., Martí, J., (eds) *Developments in Volcanology* 10: 1-55.

Turner, S., and Costa, F. (2007) Measuring time scales of magmatic evolution. *Elements* 3, 267-272.

Costa F, and Dungan M (2005) Short time scales of magmatic assimilation from diffusion modeling of multiple elements in olivine. *Geology* 33: 837-840

Costa, F., and Chakraborty, S. (2004). Decadal time gaps between mafic intrusion and silicic eruption obtained from chemical zoning patterns in olivine. *Earth and Planetary Science Letters* 227, 517-530.

Costa, F., Chakraborty, S. and Dohmen, R. (2003). Diffusion coupling between trace and major elements and a model for calculation of magma residence times using plagioclase. *Geochimica et Cosmochimica Acta* 67, 2189-2200.

Related to phase equilibria experiments and volatiles of silicate magmas

*Andújar J, Costa, F., and Martí, J (2010) Magma storage conditions of the last eruption of Teide volcano (Canary Islands, Spain). *Bulletin of Volcanology* 72, 381-395.

*Andújar, J., Costa, F., Martí, J., Wolff, J.A., and Carroll M.R (2008) Experimental constraints on pre-eruptive conditions of the phonolitic magma from caldera-forming El Abrigo eruption, Tenerife (Canary Islands). *Chemical Geology* 257, 173-194.

Pichavant, M., Costa, F., Burgisser, A., Scaillet, B., Martel, C., and Poussineau, S. (2007). Equilibration scales in silicic to intermediate magmas - Implications for phase equilibrium studies. *Journal of Petrology* 48, 1955-1972.

Costa, F., Scaillet, B. and Pichavant, M. (2004). Petrologic and experimental constraints on the pre-eruption conditions of Holocene dacite from Volcán San Pedro (36^{o} S, Chilean Andes) and the importance of sulfur in silicic subduction-related magmas. *Journal of Petrology* 45, 855-881.

Costa, F., Scaillet, B. and Gourgaud, A. (2003). Massive atmospheric sulfur loading of the AD 1600 Huaynaputina eruption and implications for petrologic sulfur estimates. *Geophysical Research Letters* 30, 1068, doi: 10.1029/2002GL016402.

Related to igneous petrology, volcanology and field work

Martí, J., Geyer, A., Andujar, J., Teixidó, F., and Costa, F. (2008): Assessing the potential for future explosive activity from Teide–Pico Viejo stratovolcanoes (Tenerife, Canary Islands). *Journal of Volcanology and Geothermal Research*, 178, 529-542.

Costa, F. and Singer, B.S. (2002). Evolution of Holocene dacite and compositionally zoned magma, Volcán San Pedro, Southern Volcanic Zone, Chile. *Journal of Petrology* 43, 1571-1593.

Costa, F., Dungan, M. and Singer, B. (2002). Hornblende and phlogopite-bearing gabbroic crustal xenoliths from Volcán San Pedro (36^{o} S), Chilean Andes: evidence for melt and fluid migration and reactions in subduction-related plutons. *Journal of Petrology* 43, 219-241.

Costa, F., Dungan, M. and Singer, B. (2001). Magmatic Na-rich phlogopite in a suite of gabbroic crustal xenoliths from Volcán San Pedro, Chilean Andes: Evidence for a solvus relation between phlogopite and aspidolite. *American Mineralogist* 86, 29-35.

Surono, Jousset, P., Pallister JS, Boichu M, Buongiorno F, Budisantoso A., **Costa, F.,** Andreastuti S., Prata F, Schneider DJ, Clarisse L., Humaida, H., Bignami C., Griswold J.P., Carn S., and Oppenheimer C. (2012). The 2010 explosive eruption of Java's Merapi volcano—A '100-year' event. *Journal of Volcanology and Geothermal Research*, 241-242, 121-135.

Moscariello, A. and Costa, F. (1997). The Upper Laacher See Tephra in Lake Geneva sediments: paleoenvironmental and paleoclimatological implications. *Schweizerische Mineralogische und Petrographische Mitteilungen* 77, 175-185.

Related to mineral physics and the mantle

Costa, F., and Chakraborty, S. (2008). The effect of water on Si and O diffusion rates in mantle olivine and implications for transport properties and processes in the upper mantle. *Physics of the Earth and Planetary Interiors* 166, 11-29.

Other

Camprubí, A., Melgarejo, J.C., Proenza, J., Costa, F., Bosch, J., Yushkin, N. and Andreichev, V. (2003). Mining techniques and geological knowledge during the

Neolithic: the case of the variscite mines at Gavà, Catalonia. *Episodes* 26, 295-301.

Costa, F., Camprubí, A. and Melgarejo, J.C. (1994). Geology of the Neolithic mines of Gavà (Spain) (translated from Spanish). *Boletín Geológico y Minero de España* 105, 436-443.

Camprubí, A., Costa, F. and Melgarejo, J.C. (1994). Characterization of the phosphate deposits from Gavà (Spain) (translated from Spanish). *Boletín Geológico y Minero de España* 105, 444-453.

* Indicates results of PhD student which I have mentored

ABTRACTS

2012

Bouvet de Maisonneuve C, Costa F., Patia H., and Huber, C (2012) Linking petrology and numerical modeling to understand geophysical signals of unrest at Rabaul caldera (Papua New Guinea). V43F-02. AGU Fall Meeting.

Cabato, J., Costa F., Newhall, C (2012) The Mayon volcano (Philipines) plumbing system: insights from crystal zoning patterns and volatile contents. Goldschmidt Conference, Montreal, Canada.

Costa, F., (2012) Magma Time Scales and Volcanic Unrest Associated with Silicic Eruptions. AOGS –AGU (WPGS) Assembly, SE85-D5-AM1, **INVITED**.

Costa, F., Andreastuti, S., Bouvet de Maisonneuve, C., Pallister, J.S. (2012) Petrological insights into the storage conditions, magmatic processes, and time scales that yielded the centennial 2010 Merapi explosive eruption. V12B-08. AGU Fall Meeting.

Costa, F., Bouvet de Maisonneuve, C. (2012) A case of Alzheimer's disease in magmatic crystals V13F-05. AGU Fall Meeting. **INVITED**

Costa, F., Druitt, T.H., Deloule, E., Dungan, M., Scaillet, B. (2012) The time scales of magmatic processes and volcanic unrest at caldera systems. Goldschmidt Conference, Montreal, Canada. **KEYNOTE.**

Girona, T., Costa F., Newhall, C (2012) Gas Mass Loss as Driver of Eruptions at Openly-degassing Volcanoes. AOGS –AGU (WPGS) Assembly, SE105-107-D5-PM1-Vir4-9.

Jay, J., Pritchard, M., Lara, L., Costa, F., Singer, B.S (2012) Deformation of Cordón Caulle Volcano (Chile) measured by InSAR from 2007 to 2011 and its relation to magmatic pre-eruptive conditions and processes from petrological inferences. V53B-2818. AGU Fall Meeting.

Jay, J., Pritchard, M., Welch, M., Naranjo, J.A., Lara, L., Costa, F., Melkonian, A., Singer, B.S (2012) The Andean Southern Volcanic Zone: deformation, eruptions, and thermal anomalies before and after the 2010 Mw 8.8 Maule earthquake. XIII Congreso Geologico Chileno, Antofagasta, Chile.

Kahl, M., Chakraborty, S., Costa, F., Pompilio, M., Liuzzo, M. (2012) Tracking changes of magma transfer beneath Mt. Etna: Evidence from crystal zonation and real-time gas monitoring. V43F-03 AGU Fall Meeting. **INVITED**

Krimer, D., Costa F., Belousov, A., Belousova, M., Newhall, C., Zaennudin, A. (2012) Unraveling the Geochemical and Petrologic Evolution of Gede Volcano, West-Java. AOGS –AGU (WPGS) Assembly, SE105-107-D5-PM1 Vir4-10.

Winson, A., Costa, F., Newhall, C., Woo, G (2012) How successful are volcano alert levels at anticipating eruptions?. Cities on Volcanoes 7.

2011

Andreastuti, S., Costa, F., Pallister, J., Sumarti, S., Subandini, S., Hreiwaseso, A. (2011) Petrology and pre-eruptive conditions of the 2010 Merapi magma. Geophysical Research Abstracts Vol. 13, EGU2011-5150, EGU General Assembly 2011.

Bouvet de Maisonneuve C, Dungan MA, Bachmann O, Costa, F (2011) Magma recharge and eruption processes at Volcán Llaima (Andean Southern Volcanic Zone, 38.7°S). Mineralogical Magazine 75, 564.

Cabato, J., Costa F., Newhall, C (2011) Magma reservoir dynamics of permanently degassing volcanoes: Mayon as a case study. IUGG Melbourne.

Costa F (2011) A review of the importance of sulphur on subduction zone volcanism. AOGS August 2011, Taipei

Costa F. (2011) How to integrate petrology and magma process time scales with geophysical and geochemical volcano monitoring data?. Geophysical Research Abstracts, Vol. 13, EGU2011-5050, EGU General Assembly 2011. **INVITED.**

Costa F (2011) What can petrology do to understand and forecast plinian eruptions? Nanyang Geoscience Roundtable, Pinatubo and Taal, June 2011

Costa F., and Mattioli, G (2011) Subvolcanic magma reservoirs and processes: constraints from crystal zoning records, experimental petrology, and geodetic data. IUGG Melbourne. **INVITED**.

Costa, F., Lara, L. Singer, B (2011). Possible tectonic control on the origin and pre-eruptive conditions of the Cordon Caulle (Chile) 1921, 1960, and 2011 silicic eruptions. AGU Fall Meeting V33B-2626

Druitt T., Deloule E., Costa F., Dungan M., and Scaillet B. (2011) Reservoir growth through mixing of different silicic magma batches prior to the Minoan eruption of Santorini. Geophysical Research Abstracts, Vol. 13, EGU2011-6365, EGU General Assembly 2011.

Girona, T. Costa F., Newhall, C (2011) Understanding permanent degassing volcanoes: the case of Mayon (Phillipines). IUGG Melbourne

Kahl M, Chakraborty S, Costa F, Pompilio M (2011) Characterizing Plumbing System Dynamics Beneath Active Volcanoes by Combined Kinetic and Thermodynamic (MELTS) Modeling. AGU Fall Meeting V33C-2644.

Krimer, D., Costa F., Newhall, C (2011) Time scales of magma mixing under Gede Volcano, Java: a study of banded pumices. IUGG Melbourne.

Mattioli, G Costa F., (2011) Unraveling the structure and processes of magma plumbing systems by combining geochemistry and geodesy. AGU Fall Meeting V32A-05.

2010

Costa F, Dohmen R, Demouchy S (2010) Modeling the dehydrogenation of mantle olivine with implications for the water content of the Earth's upper mantle, and ascent rates of kimberlite and alkali basaltic magmas. AGU Fall Meeting 2010, V24C-06. **INVITED.**

Kahl M, Chakraborty S, Costa Rodriguez F, Pompilio M (2010) Dynamic map of an evolving plumbing system: combining geochemical modeling and volcano monitoring at Mt. Etna, Sicily. AGU Fall Meeting 2010, V31E-04.

Bouvet de Maisonneuve C, Dungan MA, Burgisser A, Bachmann O, Costa Rodriguez F (2010) Combined petrological and numerical modeling approach to address highly crystalline magma remobilization prior to eruption at Volcán Llaima (Chile, 38.7o S). AGU Fall Meeting 2010, V53E-04.

2009

Costa F., Lara L., Kyriazis S.F., Vazquez J., Cembrano J. (2009) Time scales and petrogenesis of silicic magmas. Geophysical Research Abstracts, Vol. 11, EGU2009-4124-1. **INVITED.**

Costa F., Marti J. (2009) Time scales of magmatic processes of mafic historical eruptions from Tenerife, Canary Islands. *Geochimica et Cosmochimica Acta*, 73, A246.

Kahl, M, Chakraborty, S, Costa, F. (2009) Tracing magma mixing under Mt. Etna using combined thermodynamic and kinetic modeling: *Geochimica et Cosmochimica Acta* 73, A613.

2008

Andújar J., Costa F., Martí J. (2008) Experimental determination of phase equilibrium and pre-eruptive conditions of phonolitic magmas from Tenerife (Canary Islands). Macla 9, 31-32.

Costa F and Dohmen R (2008) Are peridotite xenoliths a good record of the water content of the upper Mantle?. Macla 9, 67-68.

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